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ABSTRACT

A hydrogen diffusion barrier in an integrated circuit is located to inhibit diffusion of hydrogen to a thin film of a metal oxide, such as a ferroelectric layered superlattice material, in an integrated circuit. The hydrogen diffusion barrier comprises at least 5 one of the following chemical compounds: strontium tantalate, bismuth tantalate, tantalum oxide, titanium oxide, zirconium oxide and aluminum oxide. The hydrogen barrier layer is amorphous and is made by a MOCVD process at a temperature of 450°C or less. A supplemental hydrogen barrier layer comprising a material selected 10 from the group consisting of silicon nitride and a crystalline form of one of said hydrogen barrier layer materials is formed adjacent to said hydrogen diffusion barrier.